

Amendments to the Specification:

Please amend the paragraphs starting at page 6, lines 20 and ending at page 7, line 10 to read, as follows.

a first detection device for presuming a remaining amount of the developer  
~~detecting an amount of developer~~ in the developing apparatus based upon the image  
information; apparatus;

a second detection device for detecting a remaining ~~utilized~~ amount of the  
developer in the developing apparatus; apparatus based upon the image information; and

a processing unit for determining an indicating ~~judging a utilized amount~~ level of  
the remaining amount of the developer in the developing apparatus based upon results of  
detections ~~detection~~ of the first detection device and the second detection device,

wherein in a case that the first remaining amount of the developer presumed by said  
first detection device is equal to or less than an amount defined as a predetermined amount,  
and the second remaining amount of the developer detected by said second detection  
device is equal to or more a predetermined amount, the indicating level determined by said  
processing unit of the remaining amount of the developer in said developing apparatus is  
different from both an indicating level according to the first remaining amount of the  
developer by said first detection device and an indicating level according to the second  
remaining amount of the developer detected by said second detection device. the  
~~processing unit judges the utilized amount level of the developing apparatus using the~~  
~~result of detection of the first detection device and the result of detection of the second~~  
~~detection device until the result of detection of the first detection device reaches a~~  
~~predetermined value, and judges the utilized amount level of the developing apparatus~~

~~using the result of detection of the first detection device after the result of detection of the first detection device has reached the predetermined value.~~

Please amend the paragraphs starting at page 7, line 19 and ending at page 9, line 27 to read, as follows.

a first detection device for detecting a utilized ~~[[an]]~~ amount of said developer of ~~[[in]]~~ the developing apparatus;

a second detection device for detecting a remaining ~~utilized~~ amount of ~~[[the]]~~ developer in said developing apparatus; ~~carrying member;~~ and

a processing unit for determining an indicating level of ~~judging~~ a utilized amount ~~level~~ of the developing apparatus based upon results of detection of the first detection device and the second detection device,

wherein in a case that the utilized amount of said developer carrying member detected by said first detection device is equal to or less than a predetermined amount, and the remaining amount of the developer detected by said second detection device is equal to or more a predetermined level, the indicating level of a utilized amount of said developing apparatus determined by said processing unit is different from both an indicating level of a utilized amount of said developing apparatus according to the utilized amount of said developer carrying member detected by said first detection device and an indicating level of a utilized amount of said developing apparatus according to the remaining amount of the developer detected by said second detection device. ~~the processing unit judges the utilized amount level of the developing apparatus based upon the result of detection of the first detection device and the result of detection of the second detection device until the result of~~

~~detection of the first detection device reaches a predetermined value, and judges the utilized amount level of the developing apparatus based upon the result of detection of the first detection device after the result of detection of the first detection device has reached the predetermined value.~~

A control method for an image forming apparatus ~~of the present invention is a control method for an image forming apparatus~~ to which a developing apparatus for developing a latent image on an image bearing member corresponding to image information is detachably attachable and which comprises a first detection device for presuming a remaining ~~detecting an~~ amount of developer in the developing apparatus based upon the image information, ~~apparatus,~~ and a second detection device for detecting a remaining utilized ~~amount of~~ [[the]] developer in the developing apparatus, ~~apparatus based upon the image information,~~ the control method comprising:

a first judging judgment step of judging whether or not a first remaining amount of the developer detected by the first detection device is equal to or less than a predetermined amount; ~~a utilized amount level of the developing apparatus using a result of detection of the first detection device and a result of detection of the second detection device until the result of detection of the first detection device reaches a predetermined value;~~ and

a second judging judgment step of judging the utilized amount level of the developing apparatus using the result whether or not a second remaining amount of the developer detected by the second detection device is equal to or more a predetermined amount; ~~of detection of the first detection device after the result of detection of the first detection device has reached the predetermined value.~~

a determining step for determining, in a case that the first remaining amount of the developer calculated in said first judging step is equal to or less than an amount defined as the predetermined amount, and the second remaining amount of the developer detected in said second judging step is equal to or more than the predetermined level an indicating level of the remaining amount of the developer in the developing apparatus so that the indicating level is different from both an indicating level according to the first remaining amount of the developer detected by said first detection device and an indicating level according to the second remaining amount of the developer detected by said second detection device.

Another control method for an image forming apparatus ~~of the present invention is a control method for an image forming apparatus~~ to which a developing apparatus including a developer carrying member for developing a latent image on an image bearing member is detachably attachable and which comprises a first detection device for detecting a utilized ~~[[an]]~~ amount of the developer carrying member of ~~[[in]]~~ the developing apparatus ~~apparatus~~; and a second detection device for detecting a remaining utilized amount of ~~[[the]]~~ developer in the developing apparatus, ~~carrying member~~; the control method comprising:

a first judging judgment step of judging whether or not a utilized amount of the developer carrying member detected by the first detection device is equal to or less than a predetermined amount; ~~a utilized amount level of the developing apparatus based upon a result of detection of the first developing apparatus and a result of detection of the second detection device until the result of detection of the first detection device reaches a predetermined value; and~~

a second judging judgment step of judging whether or not a remaining amount of the developer detected by the second detection device is equal to or more than a predetermined amount; and the utilized amount level of the developing apparatus based upon the result of detection of the first detection device after the result of detection of the first detection device has reached the predetermined value.

a determining step of determining in a case that the utilized amount of the developer carrying member judged in the first judging device is equal to or less than the predetermined amount, and the remaining amount of the developer judged in said second judging step is equal to or more than the predetermined amount, the indicating level of a utilized amount of the developing apparatus is different from both an indicating level of a utilized amount of the developing apparatus according to the utilized amount of the developer carrying member detected by the first detection device and an indicating level of a utilized amount of the developing apparatus according to the remaining amount of the developer detected by the second detection device.

Please amend the paragraph starting at page 20, line 13 and ending at page 20, line 27 to read, as follows.

In FIG. 1, a residual developer amount detection device of this embodiment is adapted to be able to sequentially detect a residual amount of developer during a period in which an amount of developer in a developing apparatus changes from full to empty and detect a utilized amount level of a developing apparatus by using both of an optical developer residual amount detection system and a detection device, which presumes a consumption amount of developer by counting the number of pixels of developer image

information with which a CPU 241 performs image formation using image forming information 230. Note that, in FIG. 1, one of the four developing apparatuses 15a to 15d in FIG. 2 is shown for convenient reference. ~~convenience's sake.~~

Please amend the paragraph starting at page 26, line 3 and ending at page 27, line 1 to read, as follows.

For example, the consumption amount of developer differs depending upon whether an image is a graphic pattern (solid image) or a text pattern. Due to the difference of the consumption amount of developer according to the patterns, a calculation error increases ~~increase~~ in the latter half of a life of a process cartridge. ~~life.~~ As a schematic view of a consumption amount of toner, FIG. 16 shows an adhesion state of the developer in the text pattern and the graphic pattern. FIG. 16 indicates that the text pattern has more consumption amount of developer (toner) per one dot. FIG. 17 shows how a developer decreases in the case in which ten thousand sheets are printed only in the text pattern and only in the graphic pattern. From this figure, for example, it is seen that a calculation error in a pattern of the pixel count system is about  $\pm 10\%$  in the life of ten thousand sheets of a process cartridge filled with a toner of 500 g. That is, in a process cartridge containing more amount of developer, in particular, in the case in which many images of the graphic pattern are printed, even if a total value of the pixel count is large, an actual consumption amount of toner may be small. Thus, it is difficult to sequentially and accurately detect the residual amount of developer only with the pixel count system.

Please amend the paragraph starting at page 34, line 1 and ending at page 34, line 5 to read, as follows.

In addition, in this embodiment, a residual amount level is indicated by alphabet characters. ~~alphabets~~. However, actually, the residual amount level is notified to a user with residual amount indication (percentage) corresponding to each alphabet character. ~~alphabet~~.

Please amend the paragraph starting at page 40, line 13 and ending at page 40, line 22 to read, as follows.

FIG. 12A is a table showing a residual amount level of a residual amount of developer and a utilized amount at the number of rotations of the developing sleeve roller detected by the respective detection devices. A percentage ~~Percentage~~ indication in the table indicates the residual amount of the developer and the utilized amount of the developer carrying member (developing sleeve roller). FIG. 12B is a flowchart showing a procedure for judging the utilized amount level of the developing apparatus.

Please amend the paragraph starting at page 41, line 14 and ending at page 42, line 10 to read, as follows.

The sequence shifts to step 1204 (S1204) or the like. That is, the sequence shifts to S1204 in the case in which the developing sleeve roller serving as the developer carrying member has rotated the number of times equal to or more than the number of rotation level despite the fact the residual amount of developer is large when the result of detection of the utilized amount detection device for the developer carrying member shows that a large

volume of sheets are printed in a print mode for printing an image of a low printing ratio. In this case, if the utilized amount level of the developing apparatus is judged according to the number of rotations of the developing sleeve roller, the CPU 241 shows a state in which the utilized amount level of the developing apparatus is closed to a life (replacement period) level despite the fact that the developer still remains sufficiently. Thus, the utilized amount level of the developing apparatus is maintained at D. Note that, as an example of the case in which an image of a low printing ratio is printed, this often occurs when an image with only one color point in a text image (e.g., an image such as an underline) ~~underline~~) is mainly printed.

Please amend the paragraph starting at page 42, line 26 and ending at page 43, line 13 to read, as follows.

The deterioration of the sleeve roller is caused by increasing friction between the sleeve roller and a developing blade, which is in contact with the sleeve, due to adhesion of an externally-added ~~externally-added~~ agent contained in the toner on the sleeve roller. Even if the sleeve roller is rotated in a state in which the amount of the developer is larger than the predetermined residual amount, the externally-added ~~externally-added~~ agent hardly adheres to the sleeve roller. When the developer is used and the amount of the developer has become smaller than the predetermined residual amount, the externally added agent adheres to the sleeve roller in a large quantity. As a result, friction with the developing blade increases to deteriorate the sleeve roller.



Please amend the paragraphs starting at page 44, line 5 and ending at page 44, line 15 to read, as follows.

For example, even in the case in which the developing apparatus is removed and then mounted again, since the above-described information is stored in the memory in the memory tag 210 of the developing apparatus, it becomes possible to grasp a state of the developing apparatus accurately without a wrong detection.

In addition, in this embodiment, a life level is indicated by alphabets. However, actually, the life level is notified to a user with a life indication (percentage) corresponding to each alphabet character. ~~alphabet.~~

Please amend the paragraph starting at page 46, line 22 and ending at page 46, line 27 to read, as follows.

FIG. 13A is a table showing a residual amount level of developer and a utilized amount level of the developer carrying member which are detected by the respective detection devices. A percentage ~~Percentage~~ indication in the table indicates a utilized amount level of the developing apparatus.

Please amend the paragraph starting at page 47, line 20 and ending at page 48, line 16 to read, as follows.

The sequence shifts to step 1304 (S1304) or the like. That is, the sequence shifts to S1304 in the case in which the developing sleeve roller rotated the number of times equal to or more than the number of rotation level despite the fact the residual amount of developer is large when the result of detection of the utilized amount detection device for

the developer carrying member (developing sleeve roller) shows that a large volume of sheets are printed in a print mode for printing an image of a low printing ratio. In this case, if the utilized amount level of the developing apparatus is judged according to the number of rotations of the developing sleeve roller, the CPU 241 shows a state in which the utilized amount level of the developing apparatus is closed to a life (replacement period) level despite the fact that the developer still remains sufficiently. Thus, the life (utilized amount) level of the developing apparatus is maintained at C. Note that, as an example of the case in which an image of a low printing ratio is printed, this often occurs when an image with only one color point in a text image (e.g., an image such as an underlineation) underline) is mainly printed.

Please amend the paragraphs starting at page 48, line 22 and ending at page 49, line 24 to read, as follows.

Note that, in the case in which the number of rotations of the developer carrying member (developing sleeve roller) has reached a predetermined level or more in a state in which the residual amount level M of the optical detection device is equal to B, that is, the residual amount of developer is still sufficient, if the utilized amount level of the developing apparatus is maintained at the predetermined level C, since the amount of the developer is larger than the predetermined residual amount, deterioration of the developer is less even if the number of rotations of the sleeve roller is larger to some extent, and problems, problems such as the problem related to a life due to the number of rotations, do rotations does not occur.

The deterioration of the sleeve roller is caused by increasing friction between the sleeve roller and a developing blade, which is in contact with the sleeve, due to adhesion of an externally-added ~~externally-added~~ agent contained in the toner on the sleeve roller. Even if the sleeve roller is rotated in a state in which the amount of the developer is larger than the predetermined residual amount, the externally-added ~~externally-added~~ agent hardly adheres to the sleeve roller. When the developer is used and the amount of the developer has become smaller than the predetermined residual amount, the externally added agent adheres to the sleeve roller in a large quantity. As a result, friction with the developing blade increases to deteriorate the sleeve roller.

Please amend the paragraph starting at page 51, line 6 and ending at page 51, line 10 to read, as follows.

In addition, in this embodiment, a life level is indicated by alphabets. However, actually, the life level is notified to a user with residual amount indication (percentage) corresponding to each alphabet character. ~~alphabet~~.